

EHP Activity Report No. 5

A REVIEW OF
SANITATION PROGRAM EVALUATIONS
IN DEVELOPING COUNTRIES

Anne K. LaFond

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Prepared for:

ENVIRONMENTAL HEALTH DIVISION
OFFICE OF HEALTH AND NUTRITION
Center for Population, Health and Nutrition
Bureau for Global Programs, Field Support and Research
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Water and Environmental Sanitation
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ENVIRONMENTAL HEALTH PROJECT

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WATER AND ENVIRONMENTAL SANITATION
Programme Division
EVALUATION AND RESEARCH OFFICE

UNICEF

AN EVALUATION OF SANITATION PROGRAMS
IN DEVELOPING COUNTRIES

A review of evaluation reports
with provisional draft program guidelines

The principal challenges of the next decade will not be technological questions—the hardware of water supplies and sanitation—but the "software" issues: How are water and sanitation programs to be organized and financed? How can people be trained, organized, and motivated to install, use, and maintain the facilities? How can institutions develop the sector further and make improvements more sustainable? These are the questions for the 1990s. [REF 3]

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Executive Summary

The benefits of investing in sanitation in developing countries are improved health and nutrition, particularly for children, reduced disease transmission in the community, and greater privacy, convenience, and safety through access to appropriate facilities. Yet, sanitation programming falls far short of need, and by the year 2000 may be proportionately lower than at the start of the International Drinking Water Supply and Sanitation Decade. Sanitation is an important feature of the goals set at the World Summit for Children in 1990 that are unlikely to be met without increased sanitation investment and more effective programming.

UNICEF's global evaluation of sanitation programs aims to *analyze the experience of designing and implementing sanitation interventions in developing countries to ascertain lessons for improving the effectiveness of future investments*. This paper is the first phase of this evaluation. It consists of a review and analysis of sanitation program evaluations and sanitation program strategies of various implementing agencies, a summary of lessons learned, and provisional program guidelines for discussion among planners and managers. The six topics under which data were collected and the findings are presented are service delivery, the role of sanitation consumers, influencing behavior, capacity building, economics and financing, and intra- and inter-sectoral links.

Investment in sanitation has been inadequate for several reasons. The demand for sanitation is often low, and stimulating it takes time and money. Many development institutions are not attuned to demand-led programming, which may explain their unenthusiastic approach to investing in sanitation. Furthermore, key decision-makers are not clear about an overall strategy for sanitation programming, have not reached a consensus on a definition of sanitation, and differ on the optimal role for governments, NGOs, communities, the private sector, and external donors in program implementation.

Findings

Service Delivery. Choosing a technology for sanitation programs has become less difficult with the widespread acceptance of

the ventilated improved pit (VIP) latrine and the pour flush toilet. However, an effective technology must reflect consumer preferences and local conditions. Cost, ease of operation and maintenance, and the time taken to win acceptance are three important considerations. High costs can deter acceptance. Planners should strike a balance between product sophistication, operation and maintenance requirements, and cost. Sometimes the choice of a low-cost technology may appear rational, but the demand for a more attractive product requiring less maintenance may be greater. Also, introducing a new technology takes time and effort on promotion. Project managers must always be ready to learn.

The choice of implementing institution, the division of responsibilities in service delivery, and the coordination of the implementation process are important for program success. Programs implemented by NGOs or the private sector - separately or in collaboration with government - are more likely to succeed than programs implemented by government alone. Sanitation programming often suffers in the hands of weak public institutions. However, projects that fail to 'build capacity' by bypassing these institutions only exacerbate the shortcomings of the public sector. The responsibilities for building sanitation facilities and for promoting a demand for sanitation often are assigned to different actors. Because demand for sanitation generally is weak, success depends more on promoting sanitation than on the efficiency of engineers and builders. The coordination of these two functions by a single body facilitates program implementation.

Role of Consumers. Involving consumers in project execution yields greater community responsibility for operation and maintenance and better prospects for sustainability.

However, community participation should not be limited to construction, as it often is. Four factors were found to enhance the contribution of community participation to program success: the use of existing community organizations rather than creating new ones; improving the organizational capacity of community groups and their problem solving skills;

involving women; and including communities in the design, management, and financing of projects.

Influencing Behavior. The failure of sanitation projects is often attributed to excessive emphasis on technology at the expense of changing consumer attitudes to latrine utilization and maintenance and general hygiene. While there are signs that projects are increasingly emphasizing behavioral change, they do not yet differentiate between the change needed to increase demand and the change needed in hygiene practices. Different methods are necessary depending on the purpose of stimulating behavioral change. Most evaluations noted a behavioral component aimed at selling the idea of latrines; few noted the need to change hygiene-related beliefs or practices. Moreover, because baseline surveys of hygiene behavior had rarely been conducted, it was impossible to determine what impact projects had made. Success in influencing behavioral change depended on four factors: a clear sense of purpose, the use of participatory techniques, the inclusion of women as promoters/educators, and the simultaneous employment of a range of techniques. Techniques for assessing hygiene beliefs and behavior must be more readily available to program planners.

Capacity Building. Sanitation projects should enable local institutions and people to address sanitation problems on a sustainable basis, a significant omission from most evaluations. Undoubtedly, the division of responsibilities for sanitation programming is not conducive to capacity building. Donors often establish separate units to facilitate project implementation. However, in bypassing local institutions, they directly undermine national capacity building, and by neglecting to improve local organizations and management skills through project implementation, actually imperil sustainability. Investing in community level institutions is more common than capacity building at the national and district levels.

To facilitate capacity building, projects should be designed to fit in with sectoral needs and conditions and should not be excessively dependent on external support and technical assistance. Another important factor is that trends towards decentralization and increased donor

pressure for accountability are changing the demands on local institutions.

Economics and Financing. Economics and financing did not figure prominently in the evaluations. One mentioned the effect of cost on the access to latrines by different income groups. Without accessible methods for estimating demand as demonstrated by ability and willingness of pay, planners have difficulty gathering data to arrive at appropriate cost levels. The use of subsidies for financing sanitation programs received mixed reviews. Subsidization can make expensive technology affordable and speed up implementation, but it can also create a dependence on external resources. Finally, inadequate public sector financing often impedes the realization of coverage and sustainability goals.

Intra- and Inter-sectoral links. Sanitation programs linked to water supply programs benefit from an increased demand and a greater health impact, but joint coordination can be challenging because the construction and promotion of water programs generally outpace those of sanitation programs. Some projects promoted links between sanitation and the health and education sectors. Primary health workers were employed to promote sanitation and hygiene education. In the link with the education sector, latrines were built in schools and hygiene education was introduced in the curriculum.

The evaluations were deficient in information about the link between individual sanitation projects and overall sector development, the place of sanitation in the national context, methods for measuring demand for sanitation, indicators of facility utilization, financing, the identification of beneficiary groups, baseline surveys of hygiene beliefs and practices, and inter-sectoral linkages.

Planners are beginning to change their perceptions of what constitutes a good sanitation program, although as yet there is no single paradigm of the best ideas. Experience indicates that certain combinations of factors must be present for a program to be considered successful. Based on the data gathered, a successful program should: improve the health of beneficiary groups; be financially, organizationally, and politically sustainable; maximize the benefits of investment by reaching the greatest number of people;

enhance local institutional and community capacity for organization and management; and protect the environment.

INTRODUCTION

The experience gained by governments, aid agencies, and communities during the International Drinking Water Supply and Sanitation Decade (1981-90) testifies to the benefits of investing in sanitation in developing countries. Several studies have shown that improved sanitation leads to improved health and nutrition, particularly among children (Esrey and Habicht 1986; Habicht, DaVanzo, and Butz 1988; and Esrey, Feacham and Hughes 1985). Studies comparing the differential impacts of water and sanitation programs have found that sanitation is a more important determinant of child health than water supply (Esrey 1994; Bateman and Smith 1993; and Bateman and Smith 1991). Sanitation gives beneficiaries, particularly women, greater

convenience, privacy, and possibly safety (Elmandorf 1980; Water Aid 1993). It also provides more than these individual benefits by reducing the transmission of disease through human contact and environmental pollution in the community. Box 1 lists the additional benefits from investing in sanitation.

Despite this evidence, sanitation programming falls far short of need. Sanitation coverage currently lags behind water supply, leaving 58 percent of rural populations and 26 percent of urban populations without access to facilities (UNICEF 1994). Moreover, it is estimated that coverage by the year 2000 may be proportionately lower than at the start of the

Box 1 Why Invest in Sanitation?

Health-related benefits

- Improves health status
- Meets the responsibility of government to promote preventive health care as a public good
- Reduces environmental degradation in rapidly growing urban areas

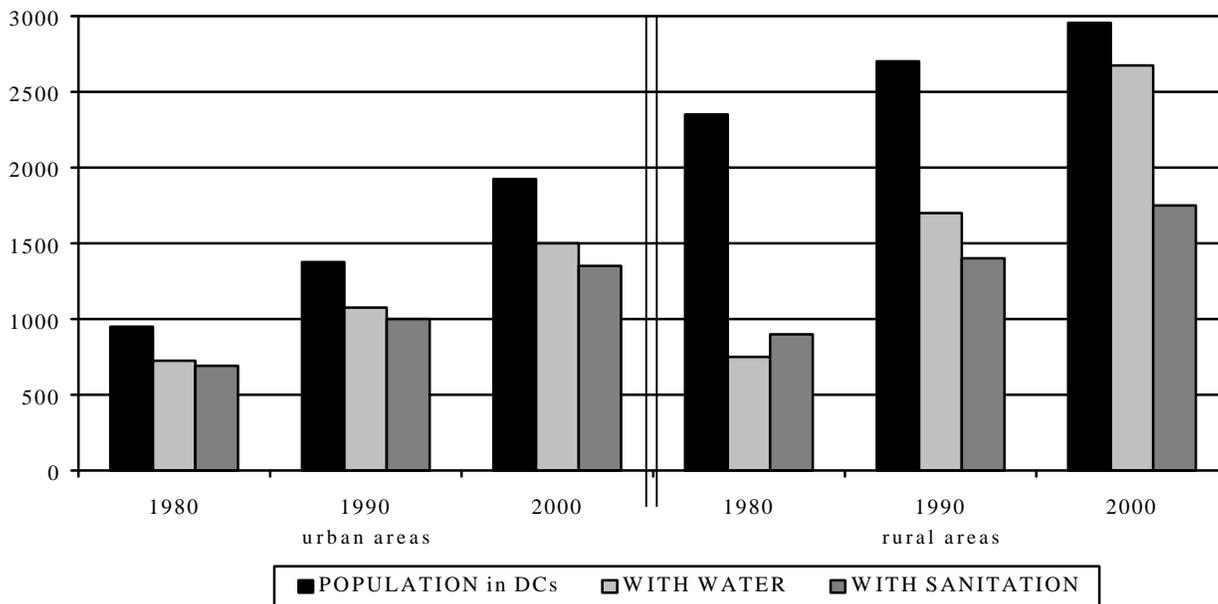
Non health-related benefits

- Contributes to the economic and social well-being of the community
- Generates political mileage, especially in urban areas
- Effects immediate financial savings in expanding peri-urban settlements; the later the investment, the costlier the intervention.

International Drinking Water Supply and Sanitation Decade (van Wijk undated)

because of the failure of sanitation programming to accelerate at the same rate as population growth. Figure 1 compares water and sanitation coverage of rural and urban populations over time.

Sanitation is an important feature of the goals set at the World Summit for Children in 1990 (Table 1). Mid-decade goals include the eradication of guinea worm disease and a reduction of one-tenth of the gap in access to sanitation; end-decade goals expect universal access to the sanitary disposal of excreta. Improved sanitation also is critical for achieving other summit goals related to health, nutrition, and empowerment. However, the same critical analysis that has enabled water programs to progress throughout the past decade has yet to be applied to sanitation. UNICEF's global evaluation of sanitation programs and design of programming guidelines aims to correct this deficiency.



Source: Adapted from United National (1990) Achievements of the International Drinking Water Supply and Sanitation Decade, Report from the Economic and Social Council, p. 20, as reported in van Wijk (undated), "Gender Aspects of Sanitation: the Missing Slipper of Cinderella?", IRC, The Hague.

Figure 1
Population in Developing Countries with
Water and Sanitation Service by Year and Area

Table 1
World Summit for Children: Goals Related to Sanitation

Goal 3	Between 1990 and 2000, reduction of 50 percent in severe and moderate malnutrition among children under the age of five years
Goal 5	Universal access to sanitary excreta disposal
Goal 19	Global eradication of poliomyelitis by 2000
Goal 23	Reduction of 50 percent in the deaths due to diarrhoea in children under the age of five years and 25 percent in the diarrhoea incidence rate
Goal 25	Elimination of guinea worm (dracunculiasis) by 2000

Purpose of Report

According to the revised terms of reference (Appendix A), the global evaluation of sanitation programs aims to *analyze the experience of designing and implementing sanitation interventions in developing countries to ascertain lessons for improving the effectiveness of future investments*. This report is the first phase of the evaluation. It consists of a review and analysis of sanitation program evaluations and sanitation program strategies of various implementing agencies, a summary of the lessons learned from these sources, and provisional program guidelines for discussion among program planners and managers. Subsequent phases of the evaluation will draw on this review to design

a final set of practical, field-oriented, program guidelines, a process that will include field-level review and possibly operational research¹ to test the appropriateness of specific guidelines.

Framework of Review

The definition of sanitation and sanitation interventions continues to evolve. In the 1970s and 1980s, most projects, reflecting a rather narrow view of sanitation, focused on low-cost facilities for safe excreta disposal. With increased appreciation of the

¹ Operational research is information gathering that applies to field-level operations and addresses questions relevant to improving operational effectiveness.

importance of hygiene behavior in program success, some planners currently are advocating a broader definition of sanitation that includes the promotion of facility use and a change in hygiene behavior.

But as yet there is no clear consensus on how sanitation should be defined.² UNICEF employs the term environmental sanitation, implying a perspective that goes beyond the introduction of technology. Nevertheless, based on the evaluations reviewed here, sanitation continues to be defined as the installation of hardware. While education and behavioral change are increasingly incorporated into projects, hardware is the dominant concern. The absence of a well-balanced view of sanitation may be one of the key constraints to program effectiveness.

For the purpose of this report, sanitation refers to *the safe handling, treatment, and disposal of excreta and wastewater, as well as behavior that ensures these practices* (adapted from WASH 1993, p 78). This definition guided the collection of data for this review, and is reflected in the six topics set out in the initial terms of reference and under which the findings are presented:

- **Service delivery** - the ability of a sanitation system to meet the needs of beneficiaries, as measured by the choice of technology and the organization and management of service delivery;
- **Role of sanitation consumers** - in needs assessment, design, implementation, and financing of program activities;
- **Influencing behavior** - as manifested in demand for sanitation facilities, participation in latrine construction, proper usage and

maintenance of latrines, and changes in hygiene practices;

- **Capacity building** - evidence that investment by government, communities, and external agencies has given local institutions and people the capacity to address sanitation problems on a sustainable basis;
- **Economics and financing** - including the cost of sanitation and the financing mechanisms to meet it;
- **Intra- and inter-sectoral links** - coordination between sanitation and water activities, and between sanitation and other sectors (e.g., health, nutrition, education, agriculture).

1.3 Methodology

A total of 38 evaluation documents or reviews, covering 54 sanitation projects implemented between 1980 and 1994, provided information on each of the six topics; 24 of these projects were supported to some degree by UNICEF. Most documents evaluated a single project, but two reviewed more than one project or program [REF 2, 24] and one was based on 10 case studies of country experience [REF 13]. A search of the UNICEF evaluation database, the UNICEF WES library, and the WASH library produced a limited number and variety of documents, reflecting a general scarcity of writing on sanitation programming experience. Thus, the evaluation reports reviewed here were eventually selected on the basis of their availability. To increase the range of information gathered, evaluations of entire projects were given priority over evaluations of specific aspects of projects (e.g., health impact). Documents focusing on the impact of hygiene education were excluded

² Very few evaluations and project histories provided a precise definition of sanitation.

because a concurrent review of this subject is being conducted by WHO.

At the outset, a standardized set of questions based on topics specified in the terms of reference was applied to each evaluation. However, this was found to be unsuitable because very few of the documents covered all the topics or presented findings in sufficient detail to answer all the questions. For example, project-stimulated changes in hygiene behavior could not be determined without adequate baseline indicators. The data gathering guide was therefore revised to include general topics rather than specific questions (Appendix B). The frequency of occurrence of each topic was recorded on a summary sheet, along with the findings of the evaluation. (Appendix C summarizes the frequency of different topics in all evaluation documents.) Data were then sorted by topic and the dominant trends and patterns of experience were noted.

Limitations

In general, both the quantity and quality of data fell short of expectations. Instead of a sample that represented a range of geographical and programming variables, it was necessary to accept whatever was offered by the few appropriate documents obtained within the given time frame. While this was due partly to the general absence of sanitation evaluations, it was also the result of the limited time frame of this review. In addition, the unequal quality of the caliber of data gathering, analysis, and presentation in the evaluation documents affected the reliability of the findings reported here. There were two consequences of these shortcomings. First, the sample of evaluation documents reviewed was smaller than planned. The original terms of reference specified 25 UNICEF and 25 external evaluations, but many of the more than 50 project

evaluations reviewed failed to provide useful information. Thus, of the 36 UNICEF evaluations selected, only 25 could be used. Second, variations in the quality of the remaining evaluations made it difficult to substantiate findings or compare experiences or lessons in sufficient detail. The results reported here are therefore mainly based on a smaller number of the better quality evaluations [see references 2, 3, 4, 7, 13, 16, 17, 20, 22, 23, 24, 25, 27, 30, 32, 33, 36, and 38, which represent 37 different projects]. In general, the evaluations in the UNICEF database were less adequate than the external evaluations in the following ways:

- about one-third lacked sufficient data on sanitation interventions (compared with water);
- reports tended to emphasize hardware (e.g., latrine construction) over software components;³
- most lacked rigorous indicators of progress apart from 'numbers of latrines constructed' and 'numbers of workers trained' (i.e., few process indicators);
- comparison with pre-project status was often missing (i.e., no indication of baseline data);
- results were reported without substantiation or lacked clarity.

³ Hardware refers to program activities such as the design and construction of sanitation facilities. Software describes less tangible components such as health and hygiene education, behavioral assessment, and interventions aimed at changing hygiene-related beliefs and practices.

Therefore, it was necessary to modify the terms of reference by conducting an additional review of selected technical and research reports (Beyer 1991, Boot 1990, Murphy 1994, Obeng and Locussol 1992, UNDP 1990b, UNICEF 1993, van Wijk, Vesth-Handen and Engberg-Pederson 1992, WASH 1993, 1992a, 1992b, 1990, Water Aid 1993, Yacoo, Braddy, and Edwards 1992) and a number of interviews with key donor and NGO personnel. A list of informants and the standard interview guide are found in Appendix D. The data gathered from these two sources are used in the discussion of issues and provisional guidelines (Chapter 4). Table 2 presents a summary of evaluations by topic.

Table 2
Summary of Evaluations by Topic (n = 35)

Topic	Number of evaluations	Better evaluations
Service delivery	31	REF 2, 3, 4, 5, 7, 13, 22
Role of consumers	31	REF 2, 3, 4, 13, 18, 23, 36
Behavioral change	30	REF 3, 7, 10, 12, 16, 18, 20, 38
Capacity building	23	REF 2, 3, 4, 13, 17, 22, 23
Economics and financing	22	REF 3, 4, 5, 11, 17
Intra- and inter-sectoral links	21	REF 16, 30

SPECIFIC FINDINGS

Sanitation has not been accorded the same importance as water supply by national or international development institutions. This is apparent from coverage statistics,⁴ expenditure estimates, and the paucity of project evaluations conducted in the past decade. From the investor's standpoint, there are valid reasons for this neglect. A number of aspects of sanitation programs make implementation particularly problematic and consequently more difficult to support than water programs and other health-related interventions (see Box 2).

First, one of the most critical aspects of sanitation programming is **the centrality of consumer demand to program success**. A World Bank review of 10 case studies notes that "the most fundamental lesson to be drawn from low-cost sanitation programs of the last decade is that success or failure and rates of progress are determined principally by consumer demand" [REF 13]. Planners must therefore tailor sanitation interventions to the needs and capacity of beneficiaries if they expect to make a lasting impact on sanitation-related health problems.

Unfortunately, demand for sanitation among target populations is often low. Communities are likely to prefer water over sanitation and may be reluctant to pay for a facility whose direct benefits are unclear. To be successful, however, sanitation

programs require individuals or households to make a significant commitment by agreeing to modify their homes or adopt new technologies. Because sanitation programs are rarely fully subsidized by government, consumers are frequently expected to pay for the installations themselves. Success also depends on consumers' involvement in program management, financing, and promotion. Moreover, for the intervention to make an impact on health, household members must use and maintain the facility properly and possibly change some basic beliefs and practices in their daily lives. Without consumer demand for better sanitation, many of these fundamental steps of program implementation are prone to failure.

A second problem with sanitation programming is that the **interest of implementing agencies in investing in sanitation may also be low**. Governments and donor agencies are deterred by a lack of good models for successful programs, a high cost per beneficiary, little institutional enthusiasm for sanitation, the logistical demands of sanitation programs, and a general lack of awareness of health benefits from improved sanitation (Murphy 1994). Thus, before sanitation interventions are considered, the need for services (and often an understanding that poor sanitation contributes to poor health) must be generated not only among beneficiaries, but also among some implementing institutions.

⁴ From 1981-1990, it is estimated that 1.348 billion people were provided with water while only 748 million received sanitation, leaving 1.7 billion unserved. (WASH 1992b: 1)

The centrality of demand-led investment to the success of sanitation interventions has important implications for all the areas of sanitation programming. Evaluation reports reveal that when policy makers, managers, and external supporters fail to make the link between investment and the consumer,

Box 2 Features of Sanitation Programming that Create Operational Problems

Program design

- Sanitation programs are more likely to succeed if they are demand-led. However, involving consumers is more complicated and time-consuming than supply-led investment.
- In the past, sanitation was defined as the introduction of facilities for safe excreta disposal. This definition excludes important aspects of effective programming such as health education and changing hygiene behavior.
- There are no agreed strategies for sanitation programming.

Program responsibility

- Responsibility for sanitation falls to a number of government institutions: health, public works, rural/urban development, education. No single institution is fully equipped to deal with all the requirements of sanitation programs. Coordination among them is often difficult.
- Governments are not generally interested in investing in sanitation. There is less political mileage to be gained from latrines than from water pumps and wells.
- External investors favor interventions that lead to rapid reduction of mortality. Sanitation is effective for preventing diseases that lead to disability and death. The direct link is difficult to demonstrate. The time lag between investment and impact is long.

Perceptions of need

- The need for better sanitation in rural areas appears low. Environmental pollution and health risks appear less than in urban areas. The detrimental effects of poor sanitation may be hidden, thus discouraging investment.
- There is, as yet, no consensus on the importance of sanitation for improving health.
- Most sanitation program staff are technically oriented. Expertise and awareness are lacking in the 'soft' aspects of programming: health, communication and education, and institution building.
- The extent of community demand for sanitation is rarely assessed.

projects falter. The literature on demand-led programming offers several lessons. First, a successful intervention is more likely to resemble marketing than traditional service provision [REF 13]. Managers cannot expect to find a latent demand for sanitation and simply wait for consumers to request facilities. Unlike health care, demand for sanitation must often be generated. Second, because program success is linked

to demand, interventions require an understanding of, and contact with, beneficiaries at every stage of investment. Third, successful sanitation programs find a way to balance demand stimulation with meeting that demand. One aspect of programming is not allowed to move ahead without the other. When sanitation efforts go astray, it is often for lack of effective coordination among the elements of

implementation (e.g., building latrines faster than demand merits).

All the topics discussed in the next chapter reflect the importance of consumer demand in sanitation programming. The lessons learned in these different areas also point to a third finding of the review.

Because sanitation programs benefit from demand-led design and implementation, **the way in which programs are supported by implementing agencies is critical.**

Nevertheless, the approach to investment followed by many development institutions is often not suited to demand-led programming. While only a small number of reports raised questions about the role of different actors in the programming process, they often illustrated a mismatch of the skills, investment cycles, and pressures of development institutions and consumer-focused programming. Donor adherence to a rigid project cycle and the desire for short-term outputs, for example, may hinder the effectiveness of investment. Weak or poorly coordinated government inputs were frequently cited as a factor of implementation failure. Thus, successful sanitation programming must be supported by appropriate institutional mechanisms among the main investors.

Finally, there is **a lack of clarity among key decision makers concerning an overall strategy for sanitation programming.** This includes the failure to reach a consensus on a definition of sanitation and on the optimal role for governments, NGOs, communities, the private sector, and external donors in program implementation.

TOPIC-RELATED FINDINGS: LESSONS OF EXPERIENCE

The division of sanitation programming into six categories is an artificial analytical device. In practice, these program components combine in different ways to enhance or inhibit program success. For managers, the key is finding the right mix of components and balancing them with critical program elements such as generating or meeting consumer demand and enhancing local capacity for addressing sanitation problems.

Service Delivery

The ability of a sanitation program to supply an appropriate service to beneficiaries is influenced by two factors: the choice of technology, and the organization and management of the program.

Choice and Development Technology

Field work and research in the 1970s and 1980s emphasized the development of appropriate technology for water and sanitation (Kalbermatten et al. 1981). Two sanitation systems emerging from this experience met the criteria of widespread applicability and popularity: the ventilated improved pit (VIP) latrine and the pour flush toilet. Of the evaluations reviewed, 75 percent examined the technology used, and most reported success with some variation of these two technologies. The Orangi project in Pakistan, however, stands out as an exception. This project was no less successful, but involved the installation of

traditional water-borne sewerage systems rather than latrines [REF 2, 36].

While the choice of basic technology no longer poses problems for most sanitation program managers, all the cases evaluated showed that adapting technology to particular circumstances is a critical element of project success. Sanitation technology requires greater adaptation to local preferences than water technology does. Again, the consumer plays a central role. Three factors of technology development emerged as important:

- finding the right balance between cost and consumer demand;
- finding the right balance between capital investment, operation and maintenance, and consumer demand;
- allowing sufficient time for technology development and adoption.

Cost

Because consumers are often expected to contribute in cash or in kind to the construction of sanitation facilities, the cost of technologies is an important factor of program success. The community's ready acceptance of responsibility for building latrines in an integrated water and sanitation project in Baluchistan is attributed to the cheap and simple technology employed by the project [REF 2]. Cost served as a deterrent to community involvement in Nepal, even with relatively high subsidies from the project [REF 8]. In addition to materials and labor, consumers may also consider the cost of the time spent on the upkeep of facilities. In the Busti

project in Baldia township, Karachi, program managers changed the design of sanitation technologies five times in six years in order to lower the cost to consumers. But these design changes resulted in decreased utilization. Reducing the depth of the pit to decrease construction costs increased the need for desludging. Moreover, the project went to great lengths to persuade beneficiaries of the advantages of lower-cost 'pits plus soakaway' latrines, when the community originally expressed a desire for a water-borne sewerage system. In the later stages of the project, the water table began to rise, requiring some soakpits to be converted to septic tanks. Evaluators suggested that responding to the community's preference for sewers at the outset of the project might have been more appropriate than persuading them of the benefits of a lower-cost technology [REF 2].

Design and Maintenance

In addition to the consumer's willingness to pay for facilities, it is necessary that the choice of technology must also be suited to beneficiary preference for convenience and product sophistication. Tradeoffs must often be made between design sophistication and operation and maintenance requirements. Consumer demand and utilization may be higher for a refined facility that requires less maintenance than for a simple, low-cost latrine. While the initial cost to the consumer and the program (if subsidies are included) of a refined system may be high, the benefits resulting from proper utilization and upkeep may exceed these costs. Some evaluations noted the availability and cost of local materials (and their transportation to the building site) as significant program design factors. Local building and maintenance capabilities were also important considerations in choosing among different technologies. These factors should also be assessed with the consumer's ability to pay, although in some cases the three cannot be coordinated successfully. In

Sudan, the demand for project latrines was high, but dependence on imported materials prevented the project from meeting this demand in a timely fashion. Replacement of materials also posed a problem [REF 16].

Technology Development

One review of lessons of the past decade recommends four steps before developing and adapting technology: find out what local solutions already are available; inquire about consumer design preferences; investigate consumer willingness and ability to pay (the two are not necessarily compatible); and estimate how much promotion might be needed to sell the technology to consumers [REF 13]. Moreover, there is evidence that the time lag between the introduction and the adoption of new practices or technologies may be extremely long in some communities. Program managers should be aware that piloting technologies and promotion may take up to 18 months. In Mozambique, for example, sales of new latrine floor slabs for low-income households were slow because people were waiting until their old latrine pits were full. Programmers had to wait over two years to determine the demand for new facilities. Although surveys reported that demand was high, sales increased only when people were ready to buy and transportation was made available to carry materials safely to their homes (Brandberg 1985).

Sensitivity and adaptability to local preferences ensure that investment in sanitation is not wasted. Although few of the project evaluations explained how technology choice was made, clearly the process requires project management to be creative and flexible. Managers should appreciate that technology development and refinement take time, although many programs ignore this learning approach to implementation.

3.1.2 Program Organization and Management

Many of the evaluations found that the organization and management of a project greatly influenced its success. Among several constraints to meeting operational objectives, the most frequent concerned the choice of implementing institution, the division of responsibilities in service delivery, and coordination of the implementation process. These three are discussed below.

Choice of Implementing Institution

At the outset of a project, decisions are made about the target population, project design, and financing. However, one of the most critical factors for success is the choice of implementing institution, which can be a government agency, a nongovernmental body, the private sector, or a combination of the three. While the evaluations provided examples of both successful and less notable program experiences for each of the three, the programs implemented by government agencies alone generally accomplished the least.

The apparent mismatch between sanitation programs and government implementing institutions is mostly attributed to the number of agencies that are involved (e.g., health, construction, education, social mobilization). However, it also stems from the inability of public institutions to carry out many of the functions required for successful sanitation programming. For example, government is not usually skilled in the marketing techniques for promoting local participation in the construction and maintenance of facilities. Many governments are centralized and local administrative structures are weak, making it difficult to encourage community participation [REF 11, 30]. Moreover, conventional bureaucratic institutions rarely

display the sensitivity required for participatory programming.

Sanitation programs require a cadre of well-trained people in the field with a clear understanding of program needs, an ability to deliver results, and a talent for convincing consumers of the benefits of sanitation [REF 13]. Deficiencies in human resource capacity in the public sector were often cited as a constraint to project implementation. In Botswana and Indonesia, program staff lacked the skills and interest in promotion and health education [REF 3,17]. In Nepal, poor supervision of facility construction and inadequate followup of the construction phase led to misuse of project materials and low utilization and maintenance [REF 8].

Rather than dealing with the weaknesses of public institutions, donors often bypass government by establishing separate project management units to ensure the timely fulfillment of project plans. The Baluchistan Integrated Development Program (BIAD) employed this implementation strategy. BIAD was set up as an independent agency so it could adopt a multi-disciplinary approach to water supply and sanitation, and was staffed with seconded government personnel. While these employees acquired skills they could apply elsewhere once the project was completed, instituting a separate management unit often caused friction with government bureaucracies. This can threaten the continuity of project benefits if future activities are subject to government control [REF 2].

As an alternative to working directly with government, donors can engage international and local NGOs to implement sanitation programs. The advantage of NGOs is their experience in working with communities and the absence of cumbersome bureaucratic procedures.

Nevertheless, problems can arise if the NGO focuses on community level programming to the exclusion of maintaining effective links with government. CARE's WASHES project in Indonesia, for example, attained remarkable coverage with strong links to communities forged by CARE staff. However, once CARE's contribution ended, the project faced a sustainability problem because government was unable to continue the same support in areas such as technical assistance and logistics [REF 3].

The private sector as a third alternative for implementation was involved in only a few sanitation projects and mostly with construction [e.g., REF 2]. In Lesotho, the national program boasts a successful partnership with the private sector. It has trained local artisans in latrine construction and some sanitation promotion and encouraged them to enter into contracts with consumers (see Box 4 at the end of Section 3.2). A review of eight water and sanitation projects in Pakistan concludes that the role of the private sector could be expanded to encompass the marketing of sanitation facilities. It also recommends that government and donors should invest in capacity building of private institutions to facilitate their involvement in sanitation programming.

Division of Responsibilities

A second constraint on operational objectives can be the division of responsibilities among investment partners. In the simplest arrangement, project implementation can be split into building sanitation facilities and promoting sanitation activities (including improved hygiene behavior). Different projects assign these responsibilities in different ways. As noted earlier, the varied tasks of sanitation programming do not fit easily under a single line ministry. Health ministries are no more accustomed to supervising construction

than public works ministries are suited to providing hygiene education. However, some successful examples were found in projects that engaged other parties to fulfill construction contracts [e.g., REF 4].

Most schemes involved communities in building part of a latrine, often providing the construction materials and labor for digging and lining the pit and laying the slab, while the consumer built the superstructure [e.g., REF 2]. Success depended on the fit between consumer demand and the design, cost, and perceived benefit from investing in sanitation. A few programs also succeeded with other types of contractual arrangements. In the Orangi project in Pakistan, for example, the community took responsibility for organizing the entire construction and maintenance of the sewerage system. In Botswana, district councils engaged the labor for construction [REF 17]. And in Lesotho, consumers and local builders made their own financial arrangements for latrine building. All three programs have been highly successful in generating demand for latrine construction, perhaps because they have been able to respond to consumer demand in a timely and innovative way [REF 4, 5].

The second task of implementation - the promotion of sanitation facility construction, usage, and maintenance and improved hygiene behavior - is normally assigned to a different group of people or a different institution. This arrangement unfortunately often results in the neglect of promotion, or poor coordination between building and promotion. Some projects elected to train new sanitation promoters [REF 2]. Others relied on health care workers to fulfill the promotion role, with little success [REF 7]. In Indonesia, the WASHES project was designed to include a strong hygiene education component, but the managers' enthusiasm for latrine construction and community-based resource mobilization eventually overshadowed education

activities. The evaluation noted that "health education was an afterthought to construction." Project technical and managerial staff were also unconvinced that changing hygiene behavior was important for lasting improvements in sanitation, and project training failed to address this necessity [REF 3]. A second example of weak coordination between building and promotion comes from the Baluchistan Integrated Area Development Program in Pakistan. The labors of large teams of engineers and community development workers did not mesh despite training to orient staff to the benefits of community involvement in programming [REF 2].

Because demand for sanitation must often be generated, project success depends more on marketing than on the efficiency of engineers and builders. The scope and pace of program development are defined by consumer demand. Two evaluations suggested that successful promotion requires extensive support and supervision of the staff assigned to fulfill this task, which is normally neglected by program managers [REF 2,13].

Coordination of Implementation

Whether government or private agencies are responsible for implementation, there is likely to be a need for a coordinating body to ensure the effective working of different elements, to prevent duplication and conflict, and to standardize practices and materials. Coordination is necessary at central as well as local levels.

There were few examples of national or local coordination. In Belize, the responsibility for coordination was transferred from the health to the public work ministry, upsetting a well-functioning program and causing friction between the two ministries [REF 7]. Lack of coordination between different levels and areas of government in Bangladesh was cited as an

impediment to program implementation [REF 30].

Role of Sanitation Consumers

"The highest rates of coverage have generally been achieved by sanitation programs in which the decision to install latrines is made collectively and community institutions are mobilized to ensure its implementation" [REF 13, p. 44].

The advantages of involving consumers in project execution are legion. In Benin, the sustainability of project activities was linked to the continuity of local committees [REF 23].

In other countries, projects in which communities had a hand in design and management demonstrated a high level of community responsibility for operation and maintenance. In both the WASHES project in Indonesia and the Orangi project in Pakistan, consumers have maintained facilities at a high standard because they felt they were part of the investment process. Participation from the outset has given them a sense of ownership and responsibility for sustaining the flow of project benefits [REF 2, 3].

Program planners are becoming convinced of the necessity of community participation, as evidenced by 77 percent of the evaluations that noted some form of this in project activities. However, few projects have encouraged participation in all aspects of programming. In most cases, participation was limited to the construction phase and usually entailed a contribution of labor, materials, or finance, rather than involvement in planning or management [e.g., REF 4, 5, 8, 27]. Only 17 percent of evaluations reported any direct involvement in needs assessment and project design,

but consumers did play an important role in promotional and education activities and in project financing.

The Busti program in Karachi, illustrating the many ways in which communities can contribute, attracted the support of 47 community organizations, which performed a range of functions from generating participation in the construction of facilities to social mobilization and the lobbying of local authorities. Households participated in promotion by building demonstration latrines in 5 percent of the area's 25,000 houses and inspiring the building of 14,000 latrines more. A key to this success was the incorporation of women in promotional activities. Initially, two women were trained as health educators to raise awareness among women and children of the links between sanitation and health. This worked so well that it stimulated the introduction of a basic education course for girls known as the Home Schools project.

There were three factors that enhanced the contribution of community participation to program success. The first was the use of existing community organizations instead of creating new institutions. In Haiti, for example, a sanitation project created village committees for pump maintenance, hygiene, health, and women's welfare, but their roles in project activities were often unclear and their foundation in the community was precarious [REF 21]. The second factor for success was a community's organizational capacity, its confidence in problem solving, and the extent to which it invited women's participation. In Indonesia, for example, local committees with management abilities were greatly responsible for the success of community financing schemes [REF 3]. The third factor was consumer participation in the design, management, and financing of a project, which generates a sense of ownership and responsibility for sustaining project benefits.

Project success is rarely determined by choice of technology, organization and management, or consumer involvement alone. In most instances, it was a combination of the three that achieved high facility coverage and utilization and the continuity of project benefits. The examples described in Box 3 and Box 4 illustrate this.

Box 3 Components of Success: Stimulating and Sustaining Demand in Pakistan

The Baldia Township project in Pakistan succeeded in building 14,000 latrines in six years in response to widespread demand. Although the community was initially not convinced of the value of the proposed technology, promotional and educational efforts quickly generated sustained demand, encouraged proper maintenance, and helped the project capitalize on the high degree of dissatisfaction with existing facilities (bucket latrines) [REF 2].

Box 4 Components of Success: Linking Hardware and Software in Lesotho

Lesotho's national sanitation program, established in 1983 initially as a single-district pilot project, is regarded as a model of integration of well-tested technologies, community involvement, and innovative organization and management styles. Government now plays a largely organizational and facilitative role, having successfully integrated the private sector and community groups into program implementation. Health education and the involvement of women are the basis of the strategy. The high demand for latrines and the good maintenance levels are attributed to changes in people's belief about sanitation and an increased sense of ownership from participation [REF 4, 5, 6].

lead to better health meant that interventions often ended with the completion of facilities. Yacoob et al. ascribed the failure of many projects to excessive emphasis on technology at the expense of behavior modification.

Fortunately, there is evidence that a change in thinking is taking place. A gradual shift in program emphasis is reported by Beyer in a 1991 review of 200 UNICEF water and sanitation evaluations, and is evident from the fact that 86 percent of the evaluations examined for this report—most of which covered projects implemented in the past eight years—included a reference to changing hygiene behavior (see Appendix 3).

Influencing Behavior Marketing and Promoting, or Changing Hygiene Practices

The importance of changing hygiene-related behavior for improving health is now widely recognized among sanitation program planners (Yacoob et al. 1992). The previous assumption that latrine construction would lead to latrine use and that latrine use would

However, project designs do not yet differentiate between behavior associated with the demand for sanitation facilities and behavior associated with health and hygiene practices. They may add a behavioral component, but only to enable latrine construction to succeed. Projects and evaluators generally betray a lack of understanding of the complexities of changing hygiene practices. For example, programmers should clarify whether behavioral change is intended to promote

latrine construction, the use of latrines, or hand washing after use. Is it more akin to marketing a facility, or stimulating a change in community beliefs about the link between health and sanitation? Different methods are necessary for different purposes.

Many projects have learned through failure the costs of neglecting the behavioral aspects of sanitation programming. In Belize, for example, no funds were budgeted for health education in the first phase of the project because managers assumed that health workers would do this. However, the assumption was proved wrong by a lack of enthusiasm, proper training, and support for PHC workers, and revised plans therefore added intensive training of health educators to the project profile. Even then, education made little headway because male health educators were found to be less effective than females. By the time a team of women health educators was trained, the project had been delayed by two years [REF 7].

Most of the evaluations that mentioned behavioral change did so in the context of stimulating demand for sanitation facilities (and thereby encouraging consumer contribution to building them) rather than changing hygiene practices. Some included a hygiene education component to raise awareness of the link between health and hygiene and encourage the proper use of latrines, but few touched on such practices as disposing of children's feces or hand washing.

Program success, therefore, was often measured by the numbers of latrines built. Moreover, it appeared that programs with a behavioral component had not surveyed hygiene beliefs and practices in the community prior to project implementation, a fact that has two consequences. First, without baseline information, health education cannot effectively modify existing patterns of behavior. In Nepal, health

education raised awareness of the benefits of safe excreta disposal, but the belief that children's stools were harmless and that it was unsafe for children to use the latrine discouraged mothers from changing their children's defecation habits. Latrines were built but only some members of the household were using them. The second consequence is that, without a clear understanding of attitudes to hygiene, it is very difficult to discern whether any appropriate behavioral change has taken place as a result of project interventions. Only one evaluation assessed changes in hygiene behavior over time and attempted to link these changes to project activities [REF 20]. A recent study in Kenya testifies to the importance of looking beyond coverage statistics for a better understanding of hygiene-related behavior (Box 5).

Techniques for Stimulating Behavioral Change

Success in influencing behavioral change depends on four factors: a clear sense of purpose; the use of participatory techniques;⁵ the inclusion of women as promoters/ educators and targets; and the simultaneous employment of a range of techniques. In general, techniques that rely on demonstration rather than exhortation have a better record of success [REF 13].

For promoting latrine construction, incentives in the form of price adjustments and availability of credit or subsidy were successfully combined in Punjab, Pakistan [REF 2]. However, in Botswana, cost was not a factor when other conditions were favorable. Promotion and education induced rural households to pay an average of \$110 for a latrine, far exceeding theoretical

⁵ For a discussion of the advantages of participatory techniques see Srinivasan 1990.

estimates of ability or willingness to pay [REF 17].

To change hygiene beliefs and practices, a small project in Nepal successfully employed women sanitation workers to provide intensive education on site in villages. Unfortunately, the national program managers, favoring construction over education, gave these women negligible support. A project in Indonesia capitalized on high levels of community involvement to bring about rapid and sustained latrine construction and use, but showed no understanding of the importance of hygiene education in project success. The staff and the beneficiaries also displayed little awareness of links between hygiene and water-and-sanitation-related health problems. The evaluators of the project concluded that while traditional hygiene education through posters, films, or signs on the latrines to encourage their use has value,

experience in hygiene education shows that just providing information to people encouraging them to change their behavior is usually not sufficient to promote change. Experiences in many countries suggest that more effective ways to promote sustained changes in individual hygiene-related behavior are to change community norms and values regarding those practices. [REF 3, p. 26]

One proven successful technique for changing hygiene beliefs and practices is to engage 'gatekeepers,' or influential community leaders, in promotion and education. Gatekeepers can win community support for new ideas and a commitment by the community to solve hygiene-related problems [REF 2].

Techniques for
Assessing

Hygiene Behavior and
Beliefs

The absence of reporting on the relationship between hygiene beliefs and behavior and project activities may be attributed to a lack of available techniques for incorporating such information into project planning and monitoring. However, the increased application of such techniques as participatory rural appraisal (PRA) to sanitation programming, as found in the Siaya project in Kenya, shows promise [REF 38]. Guidelines on hygiene education and communication in sanitation programming are also becoming available (Boot 1990 and Boot and Cairncross 1993).

Capacity Building

Most evaluations failed to include capacity building as a criterion, yet one question that should be asked in every evaluation is *whether projects are enabling local institutions and people to address sanitation problems on a sustainable basis.* Discussion of the effect of investment on capacity building was implied rather than reported directly, signifying either a lack of concern or a lack of understanding of the subject. The term itself is variously defined by different implementing agencies. Moreover, because it encompasses a range of activities (e.g., system development, management support, organizational training, public participation in operation and maintenance), there are, as yet, no standard methods or indicators for measuring change in local capacity (Vesth-Handen and Engberg-Pederson 1992). Thus, the findings on capacity building reported here are based on personal experience and interpretation of the concept.

The earlier discussion of organization and management noted that overall

responsibility for sanitation is often split among several agencies or institutions, which makes it difficult for investors to decide which institution to strengthen. A natural response is to set up a separate implementing unit that bypasses the government altogether or to work directly with nongovernmental groups and the private sector. Both approaches facilitate project implementation but undermine national capacity building. In Baluchistan, the BIAD project set up a separate management unit staffed with government engineers and other public sector employees, whom it trained in integrated and participatory management that could be applied elsewhere once they returned to the public sector. Nevertheless, the donors then engaged consultants and contractors to design the first phase of the project. Where government staff could have benefited from taking responsibility for programming, they were relegated to be workers whose primary task was fulfilling project objectives [REF 2]. Capacity was being built, but the donors appeared more interested in safeguarding their investment than empowering national agencies.

There were a number of examples of projects implemented through the government, but here, too, capacity building was often hindered by the implementation style. Evaluators attributed the failure of the sanitation component of a project in Manshera district, Pakistan, to the inadequate training of district council members in managing the software aspects of programming. Consequently, the construction of water systems raced ahead while sanitation and hygiene education were left to flounder [REF 2]. A second example in Pakistan was the Punjab Sanitation Program (1981-1986) implemented in collaboration with the provincial government, which dealt with day-to-day administration while the donor took responsibility for formulating policy, coordination, funding, and training. Because the donor made no provision for handing

over these tasks to the government when it withdrew, the program stopped abruptly and sanitation promoters and village sanitation committees, which had developed into viable community organizations, were disbanded.

By contrast, the Lesotho national sanitation program gradually grew from district management to management by two government ministries. District officials and workers were trained and in turn trained others who formed district sanitation teams. The intention of program planners was to avoid bypassing the national system in order to keep costs down and promote sustainability. Evaluators noted two important capacity building effects of the program: relations between the Ministry of Health and the Ministry of Works were strengthened through the process of implementation, and this improved relationship changed the attitude of decision-makers toward sanitation programs. For the first time, officials began to appreciate the need to integrate the hardware and software components.

Projects were fairly consistent in their attempts to build capacity at the community level, often seeking to develop local institutions to facilitate project implementation. In the Punjab, for example, community leaders were trained to manage sanitation projects [REF 2]. In Indonesia, community management and financing served as the basis of the CARE water and sanitation project, which trained community leaders to assume responsibility for water and sanitation, thus ensuring the continuity of project benefits [REF 3].

Box 5 Hygiene Behavior and Latrine Use in Kenya [REF 38]

Evaluation of the health education component of the Siaya project in Kenya revealed that local hygiene-related beliefs and practices may be hindering the project's capacity to influence health status. Some of the findings were as follows:

- Latrine use was found to be low for a number of reasons. First, social and cultural factors posed significant constraints on latrine construction, use, and maintenance. Digging the pit, building the superstructure, and making the roof are considered the man's responsibility. If the latrine is in need of repair and a male family member is not available, it will not be used; nor will it be used if a daughter-in-law, who is responsible for cleaning it, has not done so.

Second, people were discouraged from using latrines because they were not readily accessible. Latrines are built outside the compound because of local customs on privacy, social space, and kinship roles. If it is built inside the compound, the latrine cannot be shared by in-laws. Using a latrine in the presence of in-laws is tantamount to being undressed in front of them.

Third, many latrines were not used because they were built to satisfy a Chief's order. These Chiefs' latrines are required by law every time there is a cholera outbreak. They are often of inferior quality and are built only to satisfy the demands of the Chief. Figures of latrine coverage would therefore rise rapidly after cholera epidemics, but real utilization will not have changed.

- Hand washing was perceived as good but not practical. Soap was used for washing after eating but not before.

- Mothers did not perceive the necessity of hand washing after handling children's stools, which are considered harmless. Mothers buried children's feces even when latrines were available.

Constraints to Capacity Building

Two important aspects of sanitation programming were found to undermine capacity building. The first was an approach that failed to place projects in a sectoral context, often designing them to function in a vacuum unconnected with other sectoral activities. For example, while CARE's project in Indonesia built a successful model of community management and financing, it depended on technical assistance and logistical support from CARE itself. Both these functions could have been performed by government or another local institution, but no provision was made for transferring these responsibilities. Successful capacity building requires a sectoral perspective for investment.

The second constraint related to the changing roles and responsibilities of the water and sanitation sectors in developing countries linked to decentralization and democratization and new approaches to donor assistance (Box 6). For example, decentralization dramatically changes the roles of central and local governments, giving the local government responsibility for planning and implementation and leaving the central government to set policy and oversee sectoral operations. In Bangladesh, the early stages of decentralization began to blur the division of responsibility among district level institutions, disrupting project activities [REF 11]. Moreover, donors themselves are being pushed to show that aid funds have achieved 'value for money' and are transferring these pressures to their investment partners in developing countries. These changes complicate the identification

of capacity building needs and are rarely considered in project evaluations.

Box 6 Current Changes in the Organization and Management of the Water and Sanitation Sectors

- External implementing agencies are being pressured by their funding sources to become more efficient and are transferring these expectations to developing country governments and their NGO partners. To this end, efforts are being made to change the role of government (particularly the central government) from service provider to promoter or regulator of sanitation activities.
- There is a general movement toward decentralization of public sector responsibility as a natural response to pressures for greater efficiency. Decentralized structures are often more responsive to sectoral needs and bring implementors closer to the community, facilitating community participation (Edwards et al 1992).

Economics and Financing

Only a few evaluations reported economic and financing information and even fewer proffered any explanations of importance for program success. It is not possible, therefore, to provide a comparative breakdown of project financing by source (e.g., government, donor, and household contribution) or by expenditure category (e.g., construction, promotion, management, training).

The cost of erecting a single facility was sometimes compared with beneficiary ability to pay, allowing some estimation of the effect of project financing on the access to sanitation by different income groups. For example, in Lesotho, a VIP latrine was estimated to cost \$75 - \$150, just less than the average monthly income, suggesting that 45 percent of the target population

could afford to buy a latrine, 30 percent would require credit, and 25 percent would require a substantial subsidy [REF 4].⁶ While the cost did not appear to have adversely affected demand, the latrine design, which sought to avoid the need for a subsidy, probably denied people in the lowest income group access to sanitation.

To S u s i d i e o r
N o t t o S u s i d i e

The choice of financing has an important influence on capacity building and sustainability. Some projects have made it a policy not to subsidize the cost of materials and construction so as to avoid dependence on external resources. Others choose cost sharing by government, donors, and households. Despite the adverse effect on sustainability, donors and governments are often tempted to resort to subsidies to speed up implementation and make expensive technology affordable.

It was rarely clear how decisions about financing were made or whether they depended on the community's willingness or ability to pay. The Lesotho review noted the necessity of proactively gathering information on the ability and willingness of consumers to pay because estimates by government and donors are often imprecise. Economists estimate that people in developing countries will spend two to three percent of their income on sanitation, but each population and sub-population will differ.⁷ Until accurate methods of estimating demand are readily accessible to planners, trial and error is the only way to gauge the extent of financial support required for achieving a given level of coverage [REF 13]. Nevertheless, the affordability of

⁶ While recurrent costs for sanitation are low, recurrent costs for water are 20 percent to 40 percent of income.

⁷ This proportion is likely to be less in lower income groups.

sanitation to consumers, governments, and donors should not be overlooked. WHO (1987) reports a median per capita cost of \$120 for onsite urban sanitation and \$60 for standpipe water supply in the least developed countries, which may explain the slow pace of sanitation programming in general.

The respective contributions of the government and the donor are often spelled out in the project document. However, in a number of countries, the government's inability to meet its obligation often hindered project implementation [REF 2, 7]. The WASHES project in Indonesia faced a different problem. The government's budget cycles could not be adjusted to the slower pace of community-led project expansion. Eventually the project lost financing because it could not spend its entire allocation in the specified period. The sustainability and effectiveness of Lesotho's national sanitation program testified to the benefits of formulating sectoral improvement plans that work within existing budgetary constraints. However, while it has managed to make sanitation facilities accessible to the majority of the population (without an artificial dependency on external resources), it still faces financial constraints to achieving universal coverage.

Intra and Inter Sectoral Links

Water and Sanitation

Among the advantages of introducing sanitation along with water supply that Glennie (1983) cites are greater health benefits and the ease of generating a demand for sanitation once the need for water is met. Approximately 51 percent of the documents reviewed reported some link between sanitation and water supply, and in

most cases the results were positive. For example, the Baluchistan Integrated Area Development Project succeeded in generating a demand for sanitation by basing its promotion strategy on meeting the community's demand for water [REF 2]. Program managers in Bangladesh were equally successful by making water contingent on acceptance of a sanitation facility. In Lesotho, increased use of water and altered health and hygiene were sold in one package as improved sanitation [REF 4]. While the combination of improved water supply and sanitation often has a greater impact on health than each on its own, there is some evidence of operational problems with integrating the two. A few evaluations noted that the advantage of a combination was offset by the difficulties of coordination during implementation. The pace of construction and promotion of water programs may exceed that of sanitation simply because the demand for water is often just waiting to be tapped. In contrast, failure to link up with a successful water component limited the progress of sanitation programming in Pakistan's Manshera district.

Sanitation and Other Sectors

The most common inter-sectoral link was between sanitation and health. In many cases, use of a well-developed PHC infrastructure proved a rewarding strategy, such as in Botswana [REF 17]. However, dependence on a poorly funded health care system or an overburdened cadre of health workers could be detrimental to education and promotion activities [see Section 3.12 and REF 7].

In Pakistan, extensive efforts at community involvement, health education, and promotion had positive spinoffs for the education and health sectors. The sanitation program encouraged greater investment in education for girls and health

education for women and children [REF 2]. Some programs also included the installation of sanitation facilities in schools [REF 7].

ISSUES FOR DISCUSSION AND DRAFT GUIDELINES FOR SANITATION PROGRAMMING

Based on the evaluations reviewed and the information gleaned from interviews with agency personnel and existing program guidelines, this section presents a number of issues for discussion and a basic framework for sanitation programming, and preliminary program guidelines for field testing and/or review.

Issues for Discussion

Summary of Lessons Learned

Service Delivery

Technology choice: Choosing a technology has become less difficult with the widespread acceptance of the VIP latrine and the pour flush toilet. An effective technology requires careful consideration of consumer preferences and local conditions. Cost, operation and maintenance, and the timeframe for developing technologies are three important considerations. High costs can deter acceptance of facilities. Planners should strike a balance between product sophistication and ease of operation and maintenance. While the choice of a low-cost technology may appear rational, the demand for a more attractive product requiring less maintenance may be higher. In addition, introducing and adapting a new technology to a particular population takes time. Project managers should have a

flexible approach to program implementation.

Organization and management: The choice of implementing institution, the division of responsibilities in service delivery, and the coordination of the implementation process are important for program success. Programs implemented by NGOs or the private sector - separately or in collaboration with the government - are more likely to meet their objectives than programs implemented by the government alone. Sanitation programming often suffers at the hands of weak public institutions, and aid projects that fail to 'build capacity' through investment only exacerbate this shortcoming. Inadequate coordination of the responsibilities for building sanitation facilities and promoting sanitation causes coverage to lag. Because demand for sanitation is often weak, program success depends more on promoting and marketing than on the efficiency of construction. Overall coordination of sectoral activities by a single body facilitates program implementation.

Role of Consumers

Community participation in all phases of a project yields a high level of community responsibility for operation and maintenance and better prospects for sustainability. However, it is often limited to the construction phase, a practice

frequently cited as an obstacle to effective implementation. The four approaches to community participation most likely to enhance program success are: the use of existing rather than new community organizations; improving the community's organizational capacity and its problem solving skills; encouraging the involvement of women; and including the community in the design, management, and financing of a project.

Influencing Behavior

The failure of many sanitation projects is often attributed to excessive emphasis on technology at the expense of changing behavior and general hygiene practices. When programs do emphasize behavioral change, they do not differentiate between behavior to increase demand for new facilities and behavior to change hygiene practices. Different methods are necessary depending on the purpose of the desired change. Most evaluations noted a behavioral component designed to sell more latrines; few found evidence of the need to change hygiene-related beliefs or practices. Baseline surveys of hygiene behavior were rare, making it impossible to determine whether programs had been effective. Successful behavioral change is achieved by four factors: a clear sense of purpose, the use of participatory techniques, the inclusion of women as promoters/educators, and the simultaneous employment of a range of techniques. Techniques for assessing hygiene beliefs and behavior must be made available to program planners.

Capacity Building

Most evaluations made no mention of capacity building as a criterion, despite its importance for sustainability. The division of responsibilities that frequently occurs in sanitation programming makes capacity building difficult, and donors often get

around the problem by setting up separate project implementation units. However, in bypassing local institutions, they directly undermine national capacity building. By denying local organizations the opportunity to acquire management skills through project implementation and by making inadequate provisions for handing over management, they in fact contribute to poor prospects for sustainability. Investing in institutions at the community level is more common than capacity building at the national and district levels.

To facilitate capacity building, projects should reflect sectoral needs and conditions. If they are excessively dependent on external support and fail to build local capacity, they are certain to falter. Another important consideration is that the trends towards decentralization and increased donor demands for accountability are imposing new demands on local institutions.

Economics and Financing

Economics and financing did not figure prominently in the evaluations. One mentioned the effect of cost on the access to latrines by different income groups. Without accessible methods for estimating demand as demonstrated by ability and willingness to pay, planners have no way of gathering data to determine appropriate cost levels. The use of subsidies for financing sanitation programs received mixed reviews. Subsidization can make expensive technology affordable and speed up implementation, but it can also create a dependence on external resources. Finally, inadequate public sector financing often impedes the realization of coverage and sustainability goals.

Intra- and Inter-Sectoral links

Sanitation programs linked to water supply programs benefit from an increased

demand and a greater health impact, but coordinating the two can be challenging because the construction and promotion of water programs generally proceed more swiftly. Some projects promoted links between sanitation and the health and education sectors. Primary health workers were employed to promote sanitation and hygiene education. In the link with the education sector, latrines were built in schools and hygiene education was introduced in the curriculum.

Information Gaps

There are several subjects of importance in sanitation programming that did not appear in the evaluations and that should be considered for inclusion in program guidelines. These subjects are discussed briefly below:

- **The link between individual sanitation projects and overall sector development.** Defining the relationship between a project and national sanitation policy and program development, institutional changes taking place (e.g., decentralization), and national human resource development is necessary to determine whether the project was designed to complement the national program, inspire it, or change it. Without placing a project in its institutional context, it is difficult to assess its contribution to overall sector development and sustainability.
- **The link between sanitation and the national context.** The influence of land tenure, housing, democratization, and similar factors on sanitation programming should not be ignored. Urban sanitation in particular should be approached in the wider context of urban planning and these factors.
- **Methods for measuring demand for sanitation.** Program managers should have

the tools to measure the demand for sanitation, an essential ingredient of any reliable feasibility study.

- There should be some means to measure **appropriate utilization of sanitation** facilities.
- Data on the **financing** of sanitation programs are essential if cost-effectiveness and financial sustainability are to be determined.
- Indications of **who benefited from a sanitation project**, which target groups were selected, and who gained access to sanitation (e.g., by income, geographical area, gender) provide evidence of whether the neediest were reached by investment in sanitation.
- A record of pre-project **hygiene practices** and project-linked changes in hygiene behavior should be constructed.
- Details of **inter-sectoral linkages**, in both numbers and variety, must be provided.

Dispelling Myths

This report questions three common beliefs about sanitation programming:

1. UNICEF Program Guidelines for Water and Sanitation (UNICEF 1988) suggest that a sanitation program should be introduced *after* a water program has been securely established. Clearly, the proven benefits of sanitation and the necessity of accelerating investment in the sector refute this advice. More recent documents strongly advocate a higher priority for sanitation than it was previously accorded, even if this entails delinking it from water and from traditional construction style programs.

2. Contrary to the assumption that low-cost technologies are always more appropriate in poor countries than higher cost, sophisticated facilities, there is evidence that, in some cases, low-cost technologies discourage demand. Programs are more likely to succeed if they heed consumer preferences.

3. Simply encouraging latrine construction and use is not sufficient. To make an impact on health, programs must include behavioral components designed to alter hygiene beliefs and practices unrelated to the use of latrines.

Basic Framework for Sanitation Programs

Planners are beginning to change their perceptions of what constitutes a good sanitation program, although as yet there is no single paradigm that incorporates all the best ideas. Experience indicates that certain combinations of factors must be present for a program to be considered successful.

Box 7 A Successful Sanitation Program will —

Improve the health of beneficiary groups;
Be financially, organizationally, and politically sustainable;
Maximize the benefits of investment by reaching the greatest number of people;
Enhance local institutional and community capacity for organization and management; and
Protect the environment.

Draft Guidelines

Objectives Overall Aims and

The general goal of UNICEF sanitation programs is to ensure that all households benefit from a healthy physical environment free from avoidable health hazards. According to the 1988 UNICEF program guidelines, environmental health risks will be reduced "by establishing appropriate arrangements for the safe disposal of human and other wastes, the control of disease vectors, hygienic food handling, and other practical environmental sanitation measures including, in particular, informing and educating the community." (UNICEF 1988, section 4.1, page 2)

Program Aims

1. The fundamental aim of a sanitation program is to improve health status.
2. Programs should make sanitation facilities more convenient, affordable, appropriate, and reliable.
3. Sanitation programs should enhance the community's capacity to manage its own environment.
4. Sanitation programs should enhance the capacity of local institutions to address sanitation problems.

Guiding Principles

Based on the data gathered from evaluations and interviews, there is a consensus that sanitation programs should facilitate:

- Long-term **self-reliance**. They should aim for sustainable growth rather than rapid coverage. The choice of sanitation system should be guided by the likelihood of

⁸ Partially adapted from UNICEF program guidelines.

sustainability not simply by technological merit.

- **Cost-effectiveness.** Investment should seek to deliver the greatest health (and other) benefits to the greatest number of consumers at the lowest cost.
- **Technical, organizational, political, and financial sustainability.** Programs should be designed for local capacities and conditions to ensure that the people can maintain the flow of benefits from investment.
- **Expansion** of sanitation activities. Programs should permit the expansion of coverage without risking effectiveness, efficiency, and sustainability.
- **Environmental protection.** Programs should not pollute the environment.

There is no general agreement on:

- **Dealing with demand: respond to it or generate it?** There is some disagreement about whether sanitation programs should respond to demand or create it. The World Bank advocates investing only where there is a demand, an approach that ensures greater cost-effectiveness and demonstrates to skeptics the benefits of improved sanitation. Other organizations, such as UNICEF, are mandated to assist the neediest segments of the population.
- **Targeting program activities.** A related concern is the way beneficiaries are selected and whether the neediest groups must be given priority. Most evaluations did not explain the methods for choosing the project site or the target population, or why one project area or community was chosen over another. In Pakistan, the decision was left to local government authorities, who

placed political considerations before need [REF 2].

If the purpose of investing in sanitation is to ensure that donor assistance achieves the best results at the least cost, then increased access to sanitation for middle-income groups is considered a program success. Alternatively, is it wise to compromise financial sustainability or cost-effectiveness in order to improve access for the poorest groups? The World Bank would argue that responding to existing demand does benefit the poor by establishing a *sustainable sanitation system* that reduces disease transmission and environmental pollution, and that encourages demand creation through demonstration and stimulating poorer groups to design their own solutions to sanitation problems.

- **Financing arrangements: the advantages and disadvantages of subsidies.** Although it is often assumed that subsidized construction will increase demand, some evaluations suggested that subsidies can discourage utilization over the long-term by creating dependence on external resources and weakening community responsibility for operation and maintenance.
- **Integrating sanitation with water and other sectors.** There are obvious health benefits from linking water, sanitation, and health education, as evidenced in Water Aid's program strategies. However, there is some concern about the ability of program managers and implementing institutions to cope with the demands of integrated programming.
- **Adequate coverage.** Some consider that coverage and utilization should reach 90 percent for maximum health benefits [REF 13, p 5]; others conclude that 75 percent coverage is adequate.

Essential Program Activities

The following program activities are required for the application of these principles:

- The maximum participation of the community in program planning, implementation, operation, and maintenance. This is important for generating demand, financing activities, designing program strategies and plans, stimulating behavioral change, choosing technologies, and developing maintenance strategies.
- The use of mechanisms to measure consumer demand as the basis for designing program strategies and plans.
- Capacity building of groups at all levels of the system.
- Selecting a technology based on local preferences, the differences in the ability and willingness to pay among community groups, capital and recurrent cost tradeoffs, availability of local building materials, and operation and maintenance requirements.
- Promoting behavioral change through information and education.
- Identifying a strong central agency to implement a devolved program that plans, manages, and evaluates sanitation activities. It would eventually change from being a direct provider of services to taking responsibility for promotion, regulation, training, advocacy, and facilitation.
- Establishing and supporting a cadre of sanitation workers.
- Placing sanitation program strategies in the context of external economic, political, and institutional factors.

- Exploring the comparative advantages of public and private profit and nonprofit agencies in sanitation programming.
- Developing appropriate financing mechanisms.
- Promoting financial sustainability through cost-effective technologies and management approaches, community management, community financing and cost sharing, standardization of equipment, increased utilization of the private sector, and improved monitoring and evaluation.
- Promoting change in hygiene beliefs and practices.

Recommendations for Operational Guideline

General

1. Design and implement programs in response to local needs and conditions, using local people and local solutions. Improve existing facilities before introducing new technologies.
2. Display flexibility in operational plans to maintain responsiveness to local needs and conditions.
 - Adjust programming time frames, strategies, implementation schedules, and budgets to suit the pace at which local groups and institutions can function and develop.
 - Balance emphasis on production targets with other program objectives (e.g., capacity building, behavioral change, and sustainability).

- Identify and clearly define indicators to assess progress in capacity building, behavioral change, and sustainability.

3. Assess demand at the outset and tailor the program to meet it.

4. Take a fresh approach in each locality. Avoid blueprints of project designs.

Technology choice and development

1. Examine local solutions to sanitation problems before introducing a new technology.

2. Respect consumer design preferences.

3. Assess consumer willingness to pay for different technologies, ensuring that various income groups are considered.

4. Estimate the extent of promotion needed to generate demand for different technologies.

5. Allow sufficient time for testing and adapting technologies before going to scale.

Organization and management

1. Clarify the roles and responsibilities of different institutions involved in programming.

2. Use institutions in program activities according to their abilities; combining the skills of the public and the private sector is better than depending exclusively on one or the other.

3. Adapt investment cycles, planning and budgeting mechanisms, and implementation schedules to a community-based, demand-led strategy.

4. Implement the construction, promotion, and behavioral components of the program to facilitate the realization of program objectives.

Behavioral change

1. Make an initial assessment of beliefs and practices related to sanitation as the basis for designing behavioral changes and monitoring progress toward objectives.

2. Identify the aspects of beneficiary behavior to be changed.

- Distinguish between the promotion or marketing of facilities, the promotion of appropriate utilization and maintenance, and changing behavioral practices and beliefs affecting health and hygiene. Promotion of facilities may require social marketing, whereas encouraging new hygiene practices may require traditional and nontraditional forms of health education (e.g., employing gatekeepers).

- Choose indicators for monitoring and evaluation that reflect desired changes in hygiene practice.

3. Maximize the impact of health education and program activities aimed at behavioral change by:

- employing participatory techniques,
- targeting messages and activities to women and children,
- using women as facilitators, and
- employing several techniques simultaneously.

Involving sanitation consumers

1. Begin involving the community as early as the pre-project feasibility study.

2. Prepare the community before introducing a new technology.

- Develop community awareness of the value of sanitation and the requirements for operation and maintenance of facilities.

3. Assist government to develop an institutional framework that supports participation. Government procedures should enable communities to play an active role in planning, management, and evaluation.

- Encourage the establishment of mechanisms and procedures for shared decision making.

- Promote links between national institutions and communities.

4. Adjust program goals, the pace of implementation, and indicators to suit community needs and capacity.

5. Focus program activities on women.

6. Engage existing community organizations before creating new institutions.

- Train community groups to acquire organizational skills.
- Build confidence in problem solving.

Capacity building

1. Clarify the roles and responsibilities of implementing agencies.

2. Define the human resource requirements for different levels of government and for different implementing institutions. Support the development of skills through training and participatory programming.

3. Strike an appropriate balance between programming for immediate results and capacity building for sustainability.

4. Avoid setting up independent management units or excessive reliance on external technical assistance. Ensure that implementation through international or local NGOs complements, not undermines, the role of public sector institutions.

Financing

1. Choose financing mechanisms carefully to complement consumer demand and facilitate sustainability.

2. Target subsidies, where necessary, to aid lower-income groups.

3. Pay greater attention to the absolute cost of facilities, the cost-effectiveness of technologies and implementation strategies, and the cost of operation and maintenance.

Monitoring and evaluation

1. Establish plans, mechanisms, and indicators for M & E at the outset of the program.

- Gather baseline information on all aspects of programming (e.g., coverage, utilization, demand, hygiene behavior).

- Specify the way in which evaluation results will be employed by program management. Set clear objectives for evaluations.

2. Involve sanitation consumers in evaluations where feasible.

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APPENDIX A
TERMS OF REFERENCE

Overall objective: To analyze the experience of designing and implementing sanitation interventions in developing countries to ascertain lessons for improving the effectiveness of future investments.

Specific objective: Conduct a literature search of relevant evaluations of sanitation projects, including a representative sample from both within and outside UNICEF. The literature review is considered phase 1 of the global evaluation of sanitation programs. Phase 2 will examine in detail six countries where sanitation projects have been conducted. The final outcome of **both phases** will be a set of guidelines for country offices in the design and implementation of more successful sanitation programs and a set of succinct case studies.

Approximately 30 studies should be reviewed from within UNICEF and 30 from other organizations, especially the WASH/USAID Project and IRC, the Netherlands.

Examine the following five aspects of sanitation program development in detail:

- Demand for services
- Service delivery
- User satisfaction
- Economic factors
- Hygiene behavior and environmental awareness
- Intra- and inter-sectoral linkages

Analyze documents with reference to the six headings, review key lessons, and make recommendations with respect to how these aspects could be improved in development programs.

Produce a discussion paper to be used at a consultation to be held in May 1994.

APPENDIX B
SUMMAR SHEET FOR REVIEW OF
SANITATION EVALUATIONS

1. Objectives and project history

2. Definition or approach to sanitation

3. Lessons or information gaps related to

3.1 Service delivery: the ability of a sanitation intervention to supply an appropriate service to beneficiaries.

3.11 Technology selection

3.12 Management of service delivery

3.2 Role of the consumer

3.21 Needs assessment

3.22 Planning, management, and financing

3.23 Utilization/consumer satisfaction
What perceived benefit?

3.3 Behavioral change

3.31 Included in project strategy?

3.32 Approach

3.33 Success rate

3.34 Measurable health benefits

3.4 Capacity building and institutional linkages

3.41 Community level

3.42 Subnational level

3.43 National level

3.5 Economic and financing aspects

3.51 Costing data available

3.52 Capital and recurrent costs breakdown (by source)

3.53 Cost-effectiveness considered

3.6 Intra- and inter-sectoral links

3.61 Between water and sanitation

3.62 Between sanitation and other sectors

4. Issues raised

4.1 Policy

4.2 Operations

4.3 Technical

APPENDIX C
SUMMAR OF TOPICS INCLUDED IN
EVALUATION DOCUMENTS

SUMMARY OF TOPICS INCLUDED IN EVALUATION DOCUMENTS

Ref	Tech- nology	Service deliv- ery	Commp artici- pation: needs assess- ment	Commp artici- pation plan, mgt, finance	Utiliza- tion	User satis- faction	Behav- ioral change	Health benefit	Capa- city bldg	Cost- ing	Recur- rent costs esti- mated	Cost effect- iveness	Links with water	Links with other sectors
1	X	X			X	X	X			X				
2	X	X	X	X	X	X	X		X	X		X		
3	X	X	X	X	X	X	X		X	X	X	X	X	
4	X	X		X		X	X	X	X	X		X	X	X
5	X	X		X		X	X	X	X	X		X	X	X
6														
7	X	X			X	X			X	X			X	X
8				X			X	X	X	X	X	X	X	X
9														
10	X	X		X			X							
11		X					X		X		X			
12	X			X	X	X	X	X					X	
13	X	X	X	X	X	X	X	X	X	X			X	X
14		X				X	X	X	X				X	
15		X				X	X							

Ref	Tech- nology	Service deliv- ery	Comm partici- pation in needs assess- ment	Comm partici- pation in plan- ning, mgt, finance	Utiliza- tion	User satis- faction	Behav- ioral change	Health benefit	Capa- city bldg	Cost- ing	Recur- rent costs esti- mated	Cost effect- iveness	Links with water	Links with other sectors
16	X	X		X		X	X		X	X		X	X	X
17	X	X		X			X		X	X				X
18	X	X		X			X	X	X	X			X	
19	X	X		X										
20	X	X					X	X						
21				X					X				X	X
22	X	X					X		X				X	X
23		X		X			X			X				
24	X	X		X			X		X					
25	X	X		X			X		X				X	X
26														
27	X	X	X	X	X		X		X	X	X		X	
28	X	X		X	X	X	X	X	X	X			X	X
29				X				X						
30	X	X	X	X	X	X	X		X	X			X	X

Ref	Tech- nology	Service deliv- ery	Comm parti- pation in needs assess- ment	Comm parti- pation in plan- ning, mgt, finance	Utili- zation	User satis- faction	Behav- ioral change	Health benefit	Capa- city bldg	Cost- ing	Recur- rent costs esti- mated	Cost effect- iveness	Links with water	Links with other sectors
31														
32	X	X		X	X		X	X		X				
33	X	X	X	X			X	X		X			X	X
34	X	X		X		X	X	X	X	X			X	X
35	X	X		X			X	X	X			X		
36	X	X		X		X	X	X	X	X	X	X		X
37	X	X		X		X	X	X	X	X	X	X		X
38		X		X	X	X	X							
Total	74%	86%	17%	77%	31%	49%	86%	46%	66%	57%	17%	26%	51%	46%

n = 35

APPENDIX D
LIST OF INTERVIEW RESPONDENTS AND
INTERVIEW GUIDE

Respondents

Dr James Sarn Save the Children Federation

Mr. Ray Heslop Water Aid (UK)

Mr. Albert Wright World Bank

Interview guide

Date:

Name:

Organization:

1. Rough estimate of proportion of work devoted to sanitation

2. Approach to sanitation programming:

- a. Standardized goals, strategies, framework?
- b. Process of designing sanitation intervention
- c. Are there guidelines available? If not, why not?

Specific issues:

Demand

Participation

Links with other sectors

Identifying need

Reaching targets

Hardware/software balance

Behavioral change

3. Would the organization welcome guidelines?

